

Medad Team



ادوية الاطفال و جرعاتها

PEDIATRIC DRUG DOSES





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Respiratory

TB

Treatment:

بنستخدم علاج **Combination** بيستمر لوقت طويل :- ممكن توصل (6 – 9) شهور

Combined drug therapy for *Long* time: **2 to 3** first line drugs for at least **6-9 months**.

1- First line drugs are:

	Dose	Route	Side effect
• Isoniazid	10-20 mg/kg/day	orally	Hepatotoxicity
• Rifampicin	10-20 mg/kg/day	orally	Hepatotoxicity
• Pyrazinamide	**20-40** mg/kg/day	orally	Hepatotoxicity

2- Second line drugs are:

	Dose	Route	Side effect
• Ethambutol	10-20 mg/kg/day	orally	
• Ethionamide	10-20 mg/kg/day	orally	
• Streptomycin	**20-40** mg/kg/day	IM	**Ototoxicity, Nephrotoxicity**
• Kanamycin			

Bronchial asthma

TTT of acute attack:

A-Acute mild to moderate attack:

1-Bronchodilators:

	Dose	Route	Action
• B-agonist: ⓪Salbutamol, ⓪Terbutaline, ⓪Fenoterol	0.1-0.2 mg/kg/d	- Orally in mild attack - Nebulizer for infants and young children - Inhalers for older children	Selective B agonist
• Theophylline (methylxanthine derivatives)	15-20 mg/kg/d	orally or rectally	direct relaxation of bronchial Sm.Ms
• Anticholinergic: ⓪Ipratropium	250 microgram/dose, 4times daily	Inhalation	Reduce the intrinsic vagal tone

2-Corticosteriods:

⓪ ف الحالات الـ moderate or severe – بنديها *orally or parenterally*

◄ (anti-inflammatory and interfere with synthesis of LKs& PGs)

N.B:

→ Mild cases >> 1 or 2 bronchodilators are given, inhaled bronchodilator are the best

→ Moderate cases >> inhaled bronchodilator and oral corticosteroids can be used

B-Acute severe attack (status asthmatics):

-Drugs:

	Dose	Route
Intermittent B2 agonist ⓪nebulized Salbutamol	0.25-0.5 ml added to 2-3 ml saline every 1-2 h	inhalation
theophylline	5 mg/k/6 hr	IV slowly
hydrocortisone	5-10mg/kg/6 hr	IV

Preventive TTT in between attacks:

Anti-inflammatory drugs: it is indicated in persistent asthma

بندي مضادات للالتهابات و الحساسية للوقاية من خطر حدوث الـ asthma

1-Corticosteriods:

	Dose	Route
beclomethasone	200-800 microgram/d (4 doses/d)	inhaled
Budesonide	200-800 microgram/d (2 doses)	
Fluticasone	100-500 microgram/d (2 doses)	
Prednisone	2mg/kg/d divided doses for 3-10 days	oral

2-Antileukotrines:

	Route	Route
Montelukast (Singulair)	5-10mg (once daily)	orally

3-Mast cell stabilizers:

	Dose	Route
Ketotifen	0.06mg/kg/d	orally
Na cromoglycate	5-20mg/dose (3-4 doses/d)	inhalation



Cardiology

Rheumatic fever

1-**Prevention**: (very imp.)
- Prevention of streptococcal infection e.g. proper ventilation
- Early diagnosis of strept. Pharyngitis , then,
- Adequate TTT by:

Benzathine penicillin	1,200,000	IM	single injection

OR

Benzathine penicillin	1,200,000	oral	at least 10 d

In Allergic Pt.|ف حالات الحساسية من البنسلين

Erythromycine	50mg/kg/d

- Prevention of rheumatic activity in pts with history if R.F.

Benzathine penicillin	1,200,000	IM	every 2-3 weeks for life

2-**Supportive TTT**:
- Rest: pts with carditis should have absolute bed rest for at least 4 weeks,
Daily examination is important to detect carditis that usually present within 2w of onset

3-**Specific TTT**:
A-**Arthritis only** (or carditis without cardiomgaly):

Salicylates	100mg/kg for 2w	then 74mg/kg for 4-6 w

B-**Carditis with cardiomegaly or failure**:

Prednisone	2mg/kg/d for 2-3w	then taper
Salicylates	75mg/kg/d during tapering	1m after stopping Prednisone

C-**Chorea**:

Phenobarbitone	3-5 mg/kg/d
Haloperidol	0.02-0.1 mg/kg/d (in pts over 12 years)

4-**TTT of complications**: H.F
- Mild cases: complete bed rest, o2, fluid restrictions and steroids
- Sever cases:

	Dose	Action
furosemide	2mg/kg/d	Preload reducing agents (diuretics)
digoxin	Digitalizing dose : 0.02-0.05 mg/kg	Inotropes
	maintenance dose: 0.01 mg/kg/d	
captopril	may be given	After load reducing agents

Infective endocarditis

- **Prevention**
  - Dental procedures and surgery:

	Dose	Route	Timing
Amoxicillin	50mg/kg (single large dose)	oral	1 h. before the procedure

- **Specific**: immediate *parenteral* antibiotic for 6 weeks

	Dose	Route	Duration
Penicillin G	300000 IU/kg/day	*parenteral*	for 6 weeks
Oxacillin	200mg/kg/day		
Gentamicin	2 mg/kg/day		

This treatment is modified according to the results of blood culture

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Hepatology

Chronic hepatitis

- **Antiviral drugs** in chronic HBV, HCV have limited response (25%)
- **Immunosuppressive (e.g. corticosteroids-azathioprine)** in autoimmune hepatitis
- **D-penicillamine (copper chelating agent) in Wilson disease.** It is the only curable chronic liver disease and it should be excluded in every case of chronic hepatitis
- **Liver implantation** in end stage liver disease

Cholestasis

1- Treatment of correctable conditions

- Antibiotics for septicemia.
- Elimination of lactose from diet in galactosemia
- Surgical treatment of Choledochal cyst

2- Extrahepatic biliary atresia

- Correctable lesion (rare): direct drainage.
- No correctable lesion: kasia (hepatoportoenterostomy).it should be done before 60 days to obtain best results.
- Liver transplantation for end stage liver disease (biliary atresia is the commonest indication)

3- Supportive treatment

⓪ **Nutritional support**
- Fat soluble vitamins defeciency is replaced by synthetic water soluble preparations (e.g. for vit A and K) active vit D and vit E is given by injection .
- Medium chain triglycerides containing formulas.
- Calcium, zinc and Phosphorus.

⓪ **Pruritus**
- Phenobarbitone
- Cholestyramine (bile acid binder)



Portal hypertension

1- Management of variceal hemorrhage:

◎ Emergency therapy for bleeding varices:

. Anti shock measures: blood transfusion, intravenous fluids.
. Correction of coagulopathy: vitamin k, fresh plasma, platelets transfusion
. Nasogastric tube placement
. Vasopressin infusion if bleeding persist

◎ Emergency endoscopy and either injection sclerotherapy or band ligation

◎ Emergency shunt: protosystemic shunt

2- Prevention of bleeding from varices:

◎ Prevention of the first attack of bleeding

. Avoid aspirin and non steroid anti inflammatory drugs
. B adrenergic blockers (propranolol) to lower the pressure in portal area
. Prophylactic sclerotherapy or band ligation

◎ **prevention of re- bleeding: in addition to above measures, the following may needed:**

. Surgical protosystemic shunt. .Liver transplantation.

Nephrology

Minimal change nephrotic syndrome

- Home management: for most cases
- Hospitalization: indicated for the first attack or relapses with marked edema

1- Supportive treatment:

. **Diet**: rich in protein to compensate for protein loss & salt free
Fluid restriction is indicated only in moderate or severe cases of edema

. **Bed rest:** is not indicated & children with mild edema can attend school

2- Specific treatment:

◎ **Control of edema:**

> **Mild edema:** salt free diet is sufficient
> **Moderate edema:** diuretics (Furosemide) 1-2 mg/kg/day

Furosemide	1-2 mg/kg/day	diuretics

> **Marked edema:** intravenous salt free albumin followed by Furosemide

◎ **Steroids:**

- **Induction or remission: Daily therapy**

Prednisone	2 mg/kg/day (60 mg/m²/day)	divided into 3-4 doses

◎Respose: urine becomes free of albumin usually occurs after 2 weeks. Therapy is continued for 1 week after that
◎ No respose after 1 month: Steroid resistant (renal biopsy is indicated)

Minimal lesion type usually gives excellent respose to corticosteroids

- **Maintenance of remission: Alternate day therapy**
  For those who responded to prednisone

Prednisone	2 mg/kg/day	single morning dose after breakfast every other day for 3-6 ms

- Relapses: Relapse is the recurrence of edema. It is treated as the initial attack but alternate day therapy is continued for longer period *(6-12 months)*

Cyclophosphamide	2-3 mg/kg/day	single dose for 8 weeks

- in steroid resistant and in cases with frequent relapses
- alternate day therapy with low prednisone is continued during therapy
- Total leucocytic count is monitored every week (stop therapy if count drops below 3000/mm³

3- Treatment of complications: treatment of infections

. **Antibiotics:** *Penicillin* for urgent treatment of any suspected infections (peritonitis & skin infections)

Acute poststreptococcal glomerulonephritis

- **Home management**: for most cases. More than 95 5 of cases will recover completely within few weeks & even without therapy

- **Hospitalization**: for cases complicated with severe hypertension, marked congestion or severe renal failure
  - **Supporative treatment:**
    - **Rest**: indicated only during the oliguria phase of illness (first week)
    - **Diet**:
      - ◎ ***High carbohydrate diet***
      - ◎ ***Salt & protein restriction*** during the oliguria phase and in the presence of complications e.g: hypertension & marked congestion
      - ◎ ***Fluid balance:*** amount of fluids/day = urine output of the previous day + insensible water loss (400cc/m²)
  - **Specific treatment:**
    - **Control of edema:**
      . In most cases edema subsides spontaneously by the end of the first week. Fluid restriction & salt restriction during the first week are usually sufficient
      . Diuretics e.g: ***Frusemide***, in some cases
    - **Control of hypertension** (when diastolic pressure exceeds 95 mmHg- usually one oral antihypertensive drugs is sufficient)

Captopril	0.5-1 mg/kg/day	divided into 3-4 doses)	ACE Inhibitor
B blockers			

    - For eradication of any streptococcal infection

Penicillin	oral	10 days course

  - **Treatment of complications:**

Renal failure	diuretics, fluid restriction, treatment of acidosis, dialysis)
Heart failure	Dopamine not digitalis
Hypertensive encephalopathy	I.V. Diazoxide

Chronic renal failure

◎ **Periodic clinical evaluation:** nutritional status, growth, blood pressure, cariac function & skeletal examination for rachitic changes

◎ **Laboratory evaluation:** blood urea, creatinine, acid base status-serum electrolytes (Na,K,Ca,P) hemoglobin level & radiological examination of bones for evidence of rachitic changes

◎ **Measurement of glomerular filtration rate:** is important to determine the degree of renal insufficiency:

. Values between 20-30 ml/min/m²: manifestations of renal failure appear

. Values below 10 ml/min/m² denote severe renal insufficiency

1- **Conservative measures:** mild to moderate cases of renal insufficiency with GFR above 10 ml/min/m²
   - **Diet:**
     . ***Carbohydrate & fat:*** allowed freely to provide sufficient calories
     . ***Protein restriction*** to dercearse the nitrogenous waste products
     . ***Salt restriction*** in cases with hypertension



- **Drugs**:

Rickets	active form of Vitamin D
Growth failure	feeding regimen-growth hormone therapy
Hypertension	salt restriction, oral furosemide & anti-hypertensive drugs
Hyperphosphatemia & hypocalcemia	> Oral calcium supplementation > Vit D therapy > Oral aluminum hydroxide
Anaemia	erythropoietin & packed RBCs
Acidosis	oral Na HCO_3
Antibiotics	for severe urinary tract infection or severe systemic infections as it may precipitate an episode of acute renal failure

2- **Dialysis**: severe renal insufficiency with GFR below 10 ml/min/m² or when conservation measures are no longer effective
   - Peritoneal (continuous ambulatory or chronic cycling)
   - Hemodialysis

3- **Renal transplantation**:
   - It is the ideal therapy for children with severe renal insufficiency
   - It can be carried out in children above the age of 5 years
   - Problems limiting its application include: graft rejection, finding suitable donor

Urinary tract infection

Proper antibiotics according to culture and sensitivity

1. **Acute cases**:
   - **Pyelonephritis**:

Drugs	Dose	Route
Gentamicxin	4 mg/kg/day	IV initially then shift to oral therapy after 5 days if the patient is improving
ampicillin	100 mg/kg/day	

Duration of therapy 10-14 days
Urine should be sterile within 48 hours of adequate therapy

   - **Cystitis**:

Drugs	Dose	Route
Amoxicillin or co-trimoxazol	50 mg/kg/day	oral

For 7-10 days
Treatment can be adjusted according to the results of urine culture and sensitivity

2. **Recurrent cases**:
   After eradication of infection the following should be done:
   - Suppressive therapy with co-trimoxazol (Trimethoprim-sulfamethoxazole) given in lower dose (one third of usual therapeutic dose)
   - Adequate fluid intake
   - Frequent voiding
   - Avoid constipation



Nocturnal enuresis

- Identification & treatment of **organic causes** e.g. urinary tract infection & polyuria

- **Simple measures in children above 4 years:**
  - Fluid restriction after dinner
  - Let the child urinate before sleep
  - Wake the child up by night to urinate
  - Rewarding for dry night
  - Punishment should be avoided

- **Drug therapy in children above 6 years:**

Oxybutyrin	Anticholinergic drugs	increase bladder capacity
Desmopressin	vasopressin analog	single night dose 0.1-0.2 mg
Alarm device	it gives a ring immediately at the beginning of wetting so the child can wake up for urination	

Epilepsy

I- **Treatment of the ongoing seizures or treatment of status epilepticus.**

- **First aid measures**
  - Patent airway - O_2 - IV line
- **Immediate anticonvulsant drugs**

Diazepam	0.3-0.5 mg/kg	IV or rectal
Phenobarbitone	10-15 mg/kg	(loading dose) that can be repeated
	5 mg/kg	(maintenance dose) after seizure control

If phenobarbitone failed to control the seizures shift to other drugs

Phenytoin	15-20 mg/kg	(loading dose)
	5 mg/kg/day	(maintenance)
Na valproate	20-40 mg	rectally

Prevention of recurrence by antiepileptic drugs

- **Drugs**:

Drug	Seizure type	Dose(mg/kg/day)
1- Sodium valproate	- Generalized seizures: Tonic clonic, Absence and myoclonic - Partial seizures	10-40
2- Carbamazepine	- Partial seizures: the best in partial seizures - Generalized tonic clonic	10-30
3- Phenobarbitone	- Generalized tonic clonic - Partial seizures	3-5
4- Phenytoin	As phenobarbitone	5-8
5- Clonazepam	- Myoclonic - Infantile spasms	0.05-0.1
6- Ethosuximide	- absence - Myoclonic	20-40
7- Vigabatrin	- Partial - Infantile spasms	40-80
8- Lamotrigine	- Atypical absence seizures	5-10
9- Topiramate	- Partial seizures	5-10
10-Corticosteroids and ACTH	- Infantile spasms, myoclonic seizures - Symptomatic intractable seizures	

Important rules for long term drug therapy

1- Initiation of therapy only after accurate diagnosis.
2- Choice of drugs according to clinical and EEG findings.
3- Number of drugs: start with one drug in small dose (to avoid toxicity and improve compliance) then increases gradually until seizure control or maximum dose is reached
   . Failure of the first drug is an indication to add the second drug.
4- Duration and termination of therapy
   At least 2 years after the child is being seizure free – termination should be gradually.
5- Patent counseling
   - Avoid watching TV except in lighted room and far enough from the screen.
   - Computer games should be done under supervision

Meningitis

1- Prevention

- Vaccination

· Infants in the first year of life:- ***HIB vaccine 3 doses*** (against Hemophilus influenza)

· Children:- ***Meningococcal polysaccharide vaccine (A and C) at 3 years***

- Chemoprophylaxis

· ***Rifampicin*** used to eradicate meningococci from the nasopharynx of carriers and minimize the risk of contact infection.

2- Supportive treatment

- ***I.V fluid*** if meningitis is complicated by shock (otherwise it should be restricted to minimize cerebral edema)
- Blood transfusion for cases with DIC
- Anticonvulsants: ***diazepam and phenoparbitone***

3- Specific treatment: antibiotics

Neonates 3 weeks	Initial antibiotics should be active against ***haemophilus influenzae type b, streptococci and meningococci***, then modified according to the result of culture and sensitivity tests	***IV*** for at least ***10- 14 days***
Neonates and infants younger than 2 months	***Cefotriaxone***	***100 mg kg/day***,
	Chloramphenicol	***100 mg kg/day***,
	Ampicillin	***100 mg kg/day***,
Infants and children older than 2 months	Third generation ***cephalosporin and chloramphenicol***	

N.B Corticosteroids for H influenza improve CSF findings and decrease the incidence of hearing loss

4- Treatment of complications

· Assisted ventilation if respiratory failure occurs.
· Subdural taps to evacuate extensive subdural effusions

5- Follow up after treatment

.Children who have meningitis should have a complete neurological evaluation at the time of discharge (vision, hearing and developmental assessment).
. Periodic follow up for at least 2 years is recommended.



Nutritional disorders

Protein energy malnutrition

- Prevention of protein energy malnutrition

1- ***Breast feeding*** promotion (it is the most important)

⑨Enumerate factors important for successful breast feeding

2-***Health education*** of the mother about infant feeding

3-***Assessment of nutritional status*** during infancy in every visit for earlier diagnosis of nutritional deficiency disorders

- Management of protein energy malnutrition

1-Hospital management

- Indication
  . 3rd degree marasmus
  . Kwashiorkor or marasmic kwashiorkor (edema)
  . Infections e.g. pneumonia, diarrhea
- Treatment of life threatening conditions is the initial line of management:-
  . ***Control of infections*** by proper antibiotics according to culture & sensitivity
  . ***Correction of shock, dehydration & electrolyte imbalance*** by proper I.V. fluids
  . ***Correction of anemia*** by blood or packed red cells 10-15cc/kg
  . ***Prevention of hypothermia*** (adequate clothing & external heat)

2-Home or hospital: nutritional management:

	Marasmus	Kwashiorkor
Type	. ***Milk***: in young non-weaned infants . **Other food** (balanced diet): in older weaned infants	. ***Milk***: start with soy based lactose free formula (lactose intolerance), then gradually shift to standard formulas . ***Other food***: ✓Animal protein (high biological value): eggs, chicken, meat & yogurt ✓Plant protein: lentils, beans ✓Fresh vegetables & fruits are added
Amount	. 150-200 Kcal. / kg / day	. High protein diet: 4-6 gram protein/kg/day
	♦N.B: calculation according to actual body weight & gradually increase (5-10 Kcal/kg/day) every day or every other day according to the infant tolerance	
Route	***Orally***	. ***Nasogastric tube*** ⓪may be required if there is marked anorexia . ***Parentral feeding*** ⓪may be required in severe cases

♦N.B: ***Kwashiorkor*** (more difficult to manage because of anorexia)

♦Marasmus & kwashiorkor

- Treatment of vitamin & mineral deficiency

Vit. A	**Single dose** 50 000 IU (age up to 6 months) 100 000 IU (from 6 months to one year) 200 000 IU (more than one year)
Folic acid – iron	(4-6 mg/kg/day) in 3 doses
Others	vitamin D, C & B complex – minerals as (potassium & zinc)

- Treatment of parasitic infestations if present

Rickets

▪ **Preventive treatment:**

✓ ***Vitamin D orally*** ⓪ daily from the second month of life	**Full term**: 400-800 IU
	Preterm: 1000-1500 IU from the age of one month

✓ ***Exposure to sun***

✓ ***Diet rich in vitamin D*** e.g. egg yolk, liver, oily fish

▪ **Specific treatment:**

1-**Vitamin D therapy** ⓪ Vitamin D deficiency rickets is sensitive to vitamin D in ordinary doses

Oral treatment	I.M injection
Daily for 2-4 weeks	Single injection without further therapy
Vitamin D3 :2000-5000 IU/day **OR** 1.25 dihydroxycholecalciferol 0.5-2 Mg/day	600.000 IU
♦ *N.B:* If **no healing** occurs the rickets is probably ***resistant to vitamin D***	

♦ ***N.B: Injection treatment may be better than oral treatment because of:***

✓ More rapid healing

✓ Less dependence on parents for daily administration

✓ Earlier differential diagnosis from vitamin D resistant rickets

2-**Instructions to the parents:**

✓ ***Diet rich in vitamin D***

✓ ***Proper sun exposure***

▪ **Treatment of complications:**

- ***Tetany:*** 1ml/kg calcium gluconate 10% I.V slowly to be accompanied by oral calcium
- ***Treatment of iron deficiency anemia*** by oral iron therapy 6 mg/kg/day
- ***Deformities:*** surgical treatment if sever and persistent.



Infections

Rashes

	Measles	Scarlet fever	Chicken box
Prevention	• Active : ***measles vaccine*** (MMR) • Passive: ***immune serum globulin*** (0.25ml/kg IM) within 5 days after exposure. The dose increased if delayed beyond the 5th day.	Prevention of ***droplet infection***.	• ***Live attenuated varicella vaccine*** is being used
Supportive treatment	• Diet : increase ***fluid*** intake • ***Drugs*** : ✓ Cough : sedatives ✓ Fever : anti-pyretic ✓ Eye : eye drops	• Diet : increase ***fluid*** intake • ***Drugs*** : symptomatic treatment ✓ Fever : anti-pyretic ✓ Headache & pain : analgesics	• ***Itching*** : local & systemic anti-pruritic agents • ***Fever*** : antipyretics-not aspirin-as it increases the risk of *Reye syndrome* in which there is acute encephalopathy and fatty degeneration of the viscera
Specific treatment	• ***No specific treatment*** • Large doses of ***gamma globulin*** in encephalitis • Oral ***vitamin A*** (400,000 IU) in severe cases • I.V **vitamin A** for measles affecting kwashiorkor	• ***Penicillin :*** is the drug of choice : oral penicillin V 400.000 IU/dose 3 times/day for at least 10 days • ***Erythromycin :*** (40 mg/kg/day) in penicillin sensitive patients	• Antiviral drugs ***(Acyclovir)*** in immunocompromised patients
Treatment of complications	Otitis media & bronchopneumonia are treated by proper antibiotics	Re-examination after 2-3 weeks for detection and management of remote complications e.g. Rheumatic fever & glomerulonephritis.	Skin infections: by proper antibiotics

♠Rest of rashes:

1) Rubella : ttt is the same items as in measles
2) Roseola infantum :
   - Antipyretics
   - Sedatives to infants susceptible to febrile convulsions
3) Infectious mononucleosis : No specific treatment



Rest of infections

	Mumps	Tetanus	Diphtheria
Prevention	• <u>Active</u> : *Mumps vaccine or MMR* • <u>Passive</u> : *hyper immune mumps gamma globulins* (of value if given early in the incubation period)	• DPT • *Tetanus toxoid* during pregnancy for prevention of tetanus neonatorum • Following injury : if not immunized, *human antitetanus immunoglobulin* 250-500 units I.M or *tetanus antitoxin* 3000 units	*DPT vaccine*
Supportive treatment	• Measures to relieve <u>pain:</u> 1. Analgesics 2. Parotitis : heat to the glands 3. Orchitis : ice bags – support the testis • Mouth: antiseptic solutions to keep it clean	• *Isolation* and nursing in a dark quiet room • *Control of convulsions* (patent airways, oxygen, diazepam) • *Maintenance of fluids and electrolyte balance*	• *Rest* : complete bed rest if myocarditis is diagnosed • *Proper hydration and high caloric intake* • *Tube feeding* for palatal or pharyngeal paralysis pt to avoid aspiration
Specific treatment	No specific treatment	• ***<u>Human tetanus immunoglobulin</u>*** 5000-10000 I.M (single dose, neither allergy nor anaphylaxis and more persistent titers) • ***<u>Tetanus antitoxin</u>*** 50000-100000U (1/2I.M and ½ I.V) after sensitivity test • ***<u>Antibiotics to eradicate the organism:</u>*** penicillin G 10000U/Kg/day I.V for 10days • ***<u>Wound: cleaned, left opened and deprided</u>***	1. ***<u>Antitoxin</u>*** <u>to neutralize the exotoxin</u> 40000-100000 units I.M or ½ I.M and ½ I.V after sensitivity test 2. ***<u>Antibiotic</u>*** <u>to eradicate the organism</u> • *Procaine penicillin* 600000 I.U for 7-10 days • *Erythromycin* 40 mg/kg/day for 7-10 days (forsensitive pt)
Treatment of complications	<u>Encephalitis</u> : control of convulsions and measures to lower the increased tension	Respiratory support for cases with <u>asphyxia</u>	

♦<u>TTT of Pertussis</u> :

- *Erythromycin: 50mg/kg/day* for 14 days may abort or eliminate the disease if given early.



Painful oral lesion

Monilial stomatitis	Herpetic gingivostomatitis	Herpangina
Antifungal oral nystatin (mucostatin) or oral miconazole (daktarin oral gel) for 10 days	Symptomatic oral analgesics &antipyretics. . Antiviral agents are not indicated	Symptomatic

Vomiting & Persistent diarrhea

Vomiting	Persistent diarrhea
– Treatment of the cause – Antiemetic : ✓ Metoclopramide : 0.5mg / kg /day ***in 3 divided doses*** ✓ Dompridone : 1mg / kg /day ***in 3 divided doses***	▪ ***Removal of the offending agent from diet*** e.g. - lactose : give instead lactose free formula (Isomil) - Cow's milk: give instead soy bean based formula. ▪ ***Fat*** given as medium chain triglycerides to facilitate absorption. ▪ ***Vitamins*** especially ***vitamin A*** and trace elements

Gastroenteritis

1- Home management : mild to moderate cases

- Rehydration solutions: most imp. Item in management.
  - Principle: Glucose- facilitated Na absorption mechanism.
  - Composition:

NaCl: 3.5 gm	To be dissolved in one liter	Na: 90mEq/L
NaHCO3: 2.5gm		Cl : 80mEq/L
KCl : 1.5 gm		K: 20mEq/L
Glucose : 20 gm		Glucose:111mmol/L

  - Indications
    - ✓ All cases with mild and moderate dehydration
  - Dose
    - ✓ 50-100 ml/kg according to the degree of dehydration to be given over 4-6 hours.
    - ✓ Thirst mechanism is effective in regulating the amount giving to the child.
  - Method
    - ✓ Usually given by ***spoon or cup.***
    - ✓ ***Nasogastric tube*** may be used in case of: a- Refusal of ORS
      b- Newborn in an incubator
      c- Uncooperative mother



  - Advantages:
    - ✓ Suitable for ***all age groups***
    - ✓ ***All types of diarrhea***
    - ✓ ***All types of dehydration*** provided that Na level is between 115-165 mEq/L

- **Feeding:**
  - *Should not be delayed* ⇒ Delay repair of intestinal cells ⇒ Persistant diarrhea
  - Shortly after starting rehydration therapy
    - In breast fed infants: ***breast milk*** is given in small amounts and gradually increased according to child's tolerance.
    - In formula fed infants: start with ***diluted formula*** (1/4 strength) and increase the conc. gradually.
    - In older children: gradual introduction of ***solid food*** beginning with vegetables fruits and jellies.
- **Treatment of infection:**
  - *Self-limited*
  - *Antibiotics may kill normal flora* ⇒ persistant diarrhea
    - Antibiotics are indicated

      in: a- Cholera

      b- Giardia, entameba,: Metronidazole **25mg/kg/day**(Giardia) and **50mg/kg/day** (Entameba)

      c- Shigella
    - Symptomatic treatment

2- Hospital management for severe complicated cases

- **Indications**
  - ***Deterioration*** of the patient during home management
  - Severe ***dehydration*** or shock
  - Severe ***vomiting***
  - The presence of serious ***complications***: septicemia, metabolic acidosis or bleeding.

A- Intravenous rehydration

Shock therapy	Deficit therapy	Maintenance therapy
(over **1** hour)	(over **8** hrs)	(over **24** hrs)
Lactated ringer sol. (20 ml/kg)	*Glucose 5% and saline in ratio 1:1* a- **40**ml/kg in **mild** dehydration b- **80**ml/kg in **moderate** cases c- **120**ml/kg in **severe** dehydration	*Glucose 5% and saline in a ratio 4:1* a- **100**ml/kg for the **first 10 kg** b- **50**ml/kg for each kg **from 11-20 kg** c- **20**ml/kg for each kg **above 20 kg**

- **Deficit therapy** in hypernatremic dehydration is made with only 70% of the calculated amount and should be given slowly to prevent brain edema.
- **Potassium therapy**: potassium chloride solution (15%) is added to deficit and maintenance therapy: **1ml for each 100 ml** solution to correct hypokalemia.

B- Treatment of complications



Thalathemia major

1- Correction of anemia	2- Removal & prevention of iron overload by iron chelating agents
• **Packed RBCs transfusion** -10-15 ml/ kg/ every 4-5 weeks to maintain Hb level above 10 gm% (hyper transfusion) • **Folic acid** To prevent megaloblastic changes in the bone marrow	Ð **Deferoxamine**: SC by a pump over 10 hours 5-6 nights/ week Ð **Deferiprone:** oral chelating drug used when complications of deferoxamine occur

3- Splenectomy

Indications	-Hypersplenism -Huge spleen causing pressure symptoms
Timing	Should not be done before 4 years to avoid sepsis
Care after splenectomy	-Vaccination against pneumococci, meningiococci & haemophilus influenza b -Long acting penicillin

4- Recent treatment :

Bone marrow transplantation	using marrow cells or peripheral stem cells
Induction of fetal Hb production	by drugs e.g. L-carnitine
Gene therapy	is under trial

Iron deficiency anemia

- **Prevention**:
  - Adequate supply of ***iron to mother*** during pregnancy
  - Proper weaning: ***iron containing food*** (green vegetables or meat products) should be given to infant from age 6th month
  - ***Early diagnosis and treatment of the cause*** e.g. Parasitic infestation-bleeding
- **Specific treatment: Iron therapy**

	Oral	Intramuscular
Indications	the usual route	failure of oral route
Preparations	ferrous sulfate-ferrous gluconate	iron dextran
Dose	**6mg/kg/day** 3 doses between meals	**1ml(50mg)** in infant-2ml(100mg) in young children
Course	**4-6 weaks** after normalization of all blood values to replete stores	**3 to5 days**

- **Supportive treatment:**

Blood transfusion (packed red cells: **10 ml/kg slowly**) in impending heart failure or when there is serious infection.

Immune thrombocytopenic purpura (ITP)

Moderate and severe ⓪Number **below 20,000** or mucous membrane bleeding

	1- Steroids	2- IV Ig or anti D:
Action	inhibit Ab synthesis & reduce capillary fragility	bind antibodies before attacking platelets
Dose	1-2 mg / kg /day	400 /kg over 4-8 hours
Duration	until platelet count is normal or for 3 weeks which ever comes first	5 consecutive days , booster doses very 2-4 weeks may be needed
Excellent response		Rapid control of serious bleeding especially postoperative in steroid resistant cases. platelet count increase in 7-14 days after therapy

3- **Transfusion therapy**
4- **Splenectomy** ⓪ in chronic cases who are steroid resistant
5- **Immunosuppressive** e.g. azathioprine or cyclosporine in resistant cases who failed to respond to splenectomy or relapse postoperatively
6- **Plasmapharesis** ⓪ transient effect if all measures failed

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